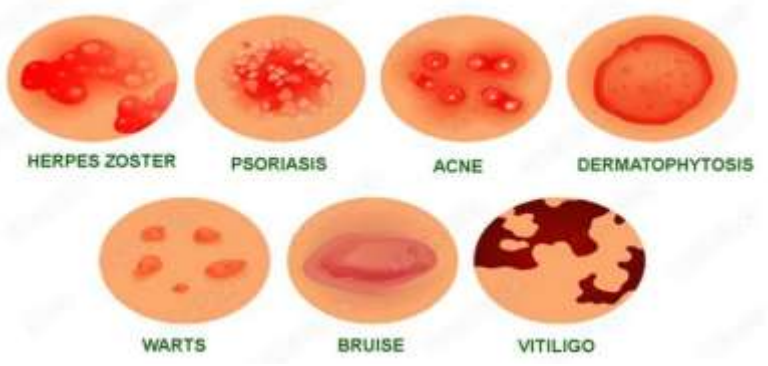
MINISTRY OF HEALTH CARE OF THE REPUBLIC OF UZBEKISTAN

TASHKENT MEDICAL ACADEMY

SKIN DISEASES



Educational methodical guide intended for students of medical universities

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SKIN DISEASES.

Inspirational Purpose of the Theme: mastering the subject is necessary for the mastering of skin diseases in other clinical departments, and in the practice of the doctor, biopsy results and sectional clinico-anatomical studies.

General purpose of mastering: we should know the etiology, pathogenesis, classification and pathological anatomy of skin diseases, as well as the normal histological structure and morphological characteristics of the skin.

The main purpose of mastering

1. To give a general description of the pathology of melanin and melanocyte exchange;
2. Description of benign epithelial tumors of the skin;
3. Describe cancerous epidermal tumors;
4. Description of tumors of the skin;
5. To describe the causes and morphological pictures of acute inflammatory dermatoses;
6. To describe the causes and morphological pictures of dermatoses in chronic inflammation;
7. Describe bullous dermatoses;
8. Description of skin tumor diseases;
9. Description of the morphological aspects of panniculitis;
10. To describe the morphological aspects of skin infections.

Required knowledge level: the student should know the anatomical and histological structure of the skin and the morphology of its tumors, dystrophic, dysplastic, inflammatory, sclerotic and tumor processes.

Independent preparation questions (level of existing knowledge):

1. Melanin metabolism and pathology of melanocytes;
2. Benign epithelial tumors and their morphological description;
3. Morphological description of precancerous and malignant epidermal tumors;
4. Dermal tumors and their morphological description;
5. Morphological description of acute inflammatory dermatoses;
6. Morphological description of chronic inflammatory dermatoses;
7. Morphology of bullous dermatoses;
8. To know the morphological aspects of skin tumors;
9. Panniculitis and its morphological aspects;
10. Etiology, pathogenesis and morphological description of skin infections.

Terminology

Melanocytes- cells of the skin that produce a special melanin pigment.

Nevus- this is a good-quality structure on the skin, congenital or acquired, simply speaking, these changes are called moles or birthmarks.

Seborrhea–(lat.sebum (oil) is a disease of excess oil production from the skin as a result of nervous and neuroendocrine control disorders.

Dermatitis– (Greek dérma, dérmatos — skin + lat. itis — inflammation) — inflammatory diseases of the skin under the influence of chemical, physical and biological damaging factors.

Lishay- skin damage caused by fungus or virus.

Acne - (greek. aknḗ "spot, peak, flowering time") - diseases resulting from inflammation in the pilosebation structures of the skin (hair follicles and sebaceous glands).

Rosacea- (lat. acne rosacea - pink poppy) - diseases of the skin of the face due to chronic relapsing angioneurotic causes.

Acne- It is caused when blocked skin follicles from a plug caused by oil from glands, bacteria, and dead cells clump together and swell.

Alopecia Areata- it is a condition that attacks your hair follicles (it is root of hair). In most cases, hair falls out in small, round patches.

Atopic Dermatitis- It is a skin disease causing much itchiness. Scratching leads to redness, swelling, cracking, weeping clear fluid, crusting, and scaling.

Epidermolysis Bullosa- It is a group of diseases causing painful blisters to form on the skin. These blisters can cause problems if they become infected.

Hidradenitis Suppurativa (HS)- Hidradenitis suppurativa (also known as acne inversa) is a chronic, noncontagious, inflammatory condition characterized by pimple-like bumps or boils and tunnels or tracts on and under the skin.

Ichthyosis- It is a disorder that causes dry, thickened skin that may look similar to fish scales.

Pachyonychia Congenita- It is a rare disorder causing thick nails and painful calluses on the bottoms of the feet and other symptoms.

Pemphigus- It is a disease where the immune system attacks healthy cells in the top layer of skin, resulting in blisters.

Psoriasis- is a skin disease that causes red, scaly skin that may feel painful, swollen, or hot. Learn more about the types and what causes psoriasis.

Raynaud's Phenomenon- It is a disease that affects blood vessels. It causes your body to not send enough blood to the hands and feet for a period of time.

Rosacea- It is a long-term disease that causes reddened skin and pimples, usually on the face. It can also make the skin thicker and cause eye problems.

Scleroderma- causes areas of tight, hard skin, but can also harm your blood vessels and organs. Learn the causes and treatments of this skin disease.

Vitiligo- is a disorder that causes patches of skin to become white. It happens because cells that make color in your skin are destroyed.

Content of students' independent work

1. Study of the pathology of melanocytes in the examples of micropreparations "Dysplastic nevus" and macro-micropreparations "skin Melanoma".
2. Study of morphological aspects of good-quality epithelial tumors in examples of micropreparation "Seborrhoeic keratosis".
3. Study of the morphological aspects of pre-cancerous and low-quality epidermal tumors in the examples of macro- and micropreparation "Actinic keratosis", "Basal cell carcinoma".
4. To study the morphology of acute inflammatory dermatoses in the examples of micropreparations "acute eczematous dermatitis", "multiform erythema".
5. To study the morphology of chronic inflammatory dermatoses in the examples of macro- and micropreparations "Psoriasis", "flat lichen".
6. Study of the morphology of bullous dermatoses in the examples of micropreparation "Acantholytic pemphigoid".

Organization of the lesson, classification of studied preparations

Micropreparations:

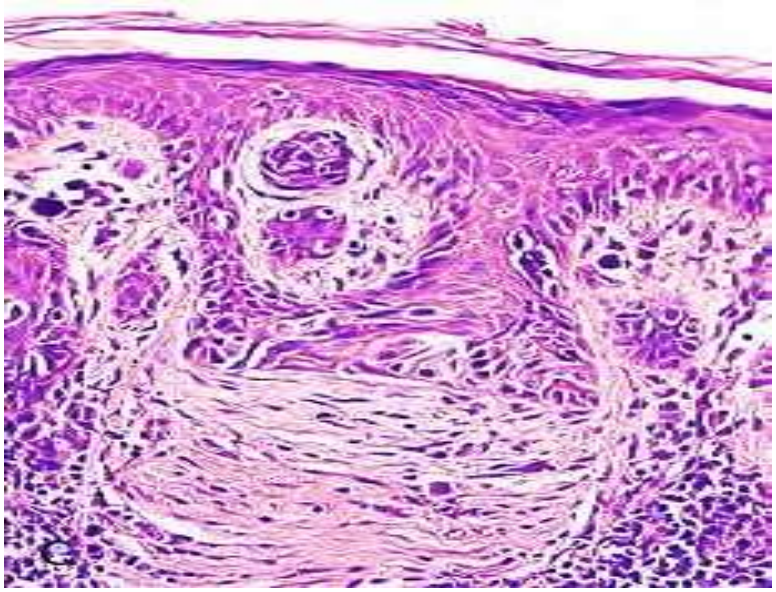

Figure 1. Dysplastic nevus (stained with hematoxylin-eosin) - an important clinical feature is cellular atypism (hyperchromic nuclei with uneven edges). Under the nevus in the dermis - linear fibrosis.

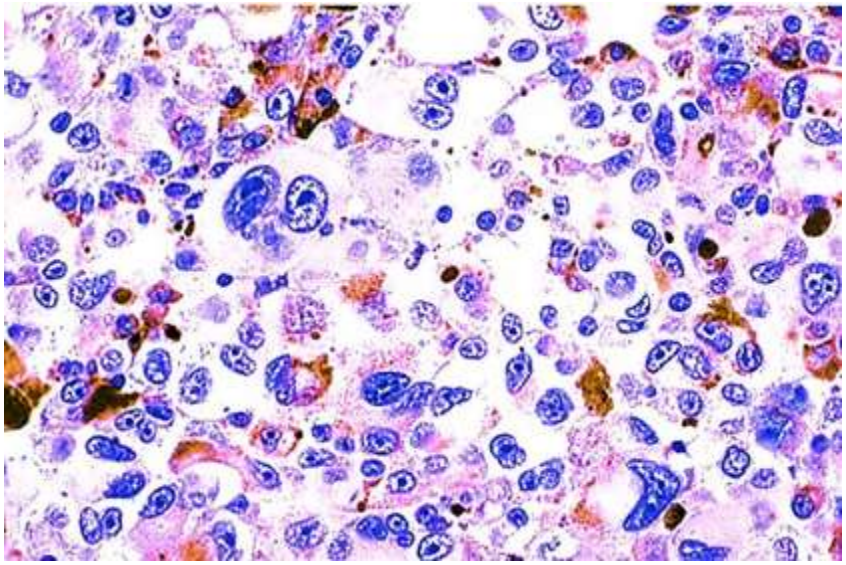

Figure 2. Melanoma (stained with hematoxylin-eosin) is a tumor consisting of large polygonal cells of various shapes and nuclei. Individual cells have melanin .

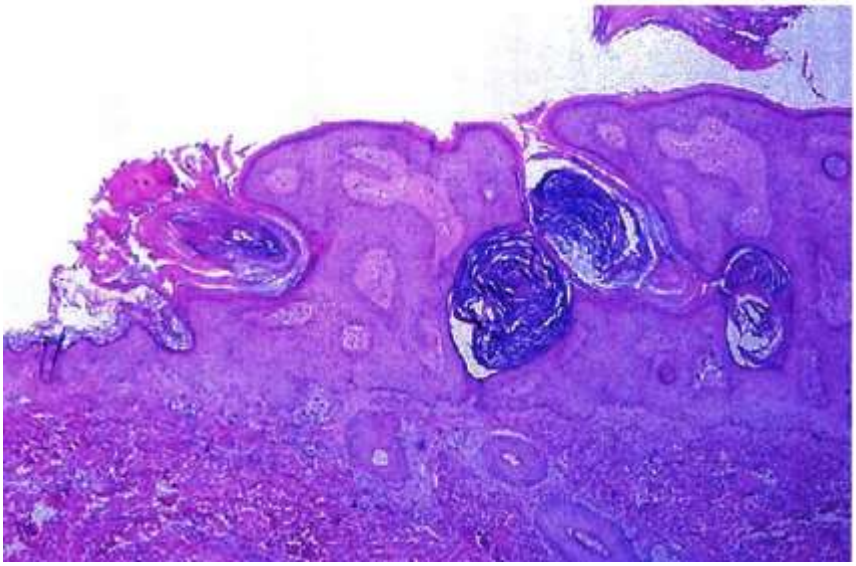

Figure 3. Seborrhoeic keratosis (stained with hematoxylin-eosin) - among the simple broad nodules of the epidermis, there are horn-shaped, keratin-filled cysts.

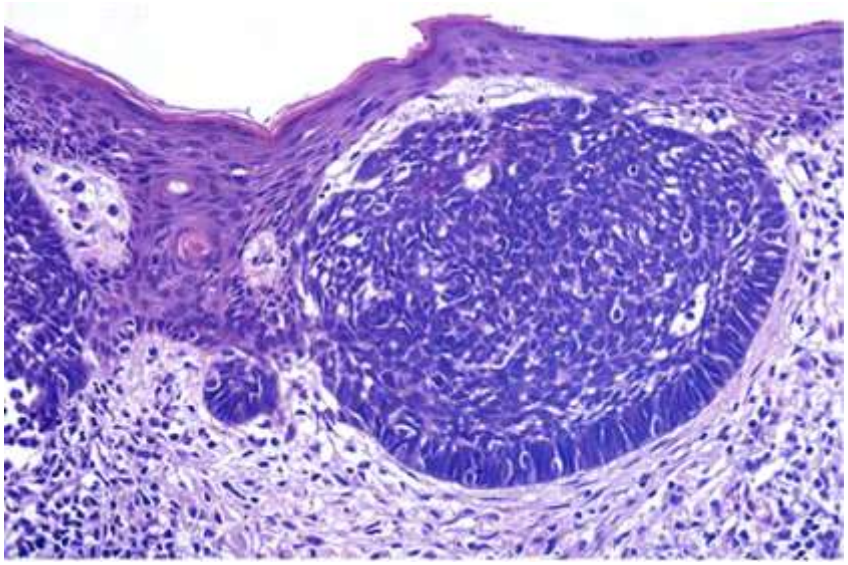

Figure 4. Basal cell carcinoma (stained with hematoxylin-eosin) is composed of cell foci or trabeculae infiltrating the dermis beneath tumor cells. Inflammatory infiltration in the stroma.

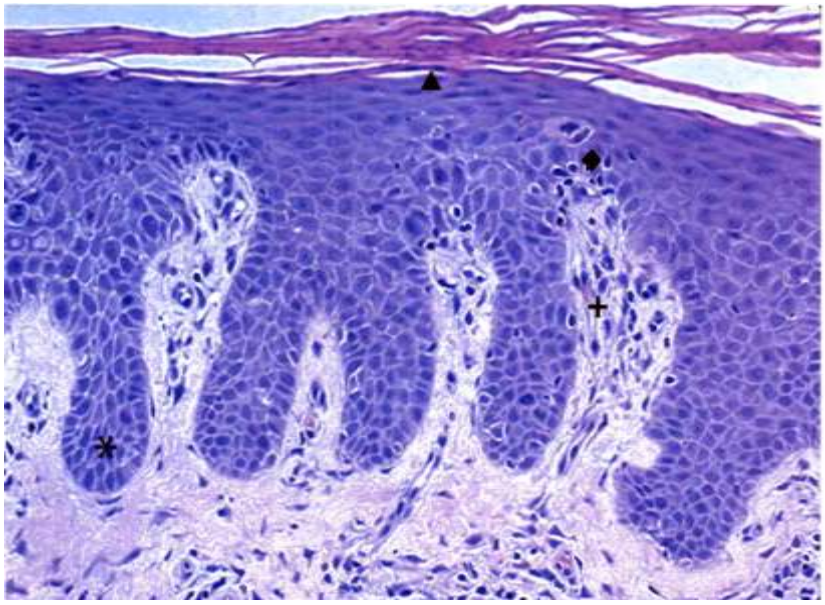

Figure 5. Psoriasis (stained with hematoxylin-eosin) - growth and extension of comb-like webs into the underlying dermis. The granular layer is sharply thinned, and a clearly visible parakeratosis can be seen above them. A collection of neutrophilic granulocytes with low spongiform changes is located in the upper layers of the epidermis and parakeratosis areas.

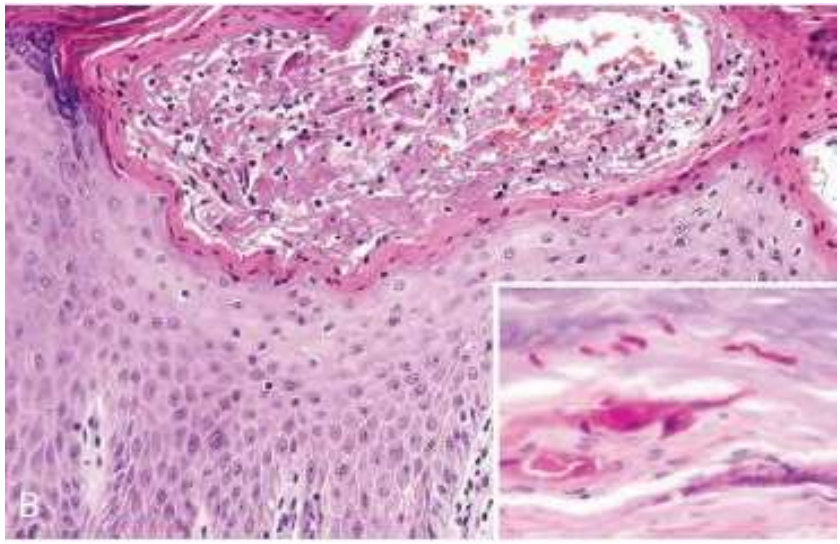

Figure 6. Herpes (stained with hematoxylin-eosin) - obvious hyperplasia of the epithelium, acute hyperkeratosis, papillomatosis. The granular layer of the epidermis is sharply thickened.

Macropreparations:

Figure 7. Actinitic keratosis. The lesion is scaly, unevenly painted in yellow-brown color.

Figure 8. Basal cell carcinoma. The tumor is located on the lower lip, has a nipple-like shape with a pink border and a perforated center.

Figure 9. Psoriasis. Thickened, silvery, saline skin lesions.

Figure 10. Dermatophytia.

Pathology of Skin Diseases

Inflammation. Inflammation is a natural immune response to protect against harmful stimuli, such as pathogens or tissue injury. In the context of skin diseases, when the skin is exposed to irritants, allergens, infections, or autoimmune reactions, the immune system triggers an inflammatory response. This response can manifest as redness, swelling, heat, and pain. The issue arises with chronic or excessive

inflammation contributing to skin diseases. TRPV-ion channels trigger the release of pro-inflammatory mediators such as calcitonin gene-related peptide and substance P, perpetuating conditions like psoriasis, atopic dermatitis, prurigo, and rosacea. Immune cells within the skin, including mononuclear cells, dendritic cells, and mast cells, also express TRPV1, further amplifying inflammation by releasing cytokines and neuropeptides. This amplification can cause abnormal cell growth in the case of wound repair, forming a healing tissue niche resembling the tumor stroma if hijacked, a gateway toward skin cancer.

Immune System Dysregulation. Because the immune system triggers inflammation as an innate response to foreign particles, there is an overlap between the consequences of irregularity in the immune system and the inflammatory response. For instance, T cell populations on the skin, even rare ones like γδ T cells, have a specific role in allergic skin inflammation and in maintaining tissue homeostasis. Effector T cells and memory T cells are accompanied by natural killer cells and T cells expressing MHCR on the skin. This impressive ensemble of specific immunity can collapse with interference in signaling or antigen expression. The classic case is HIV, which puts individuals at a higher risk of developing non-melanoma skin cancers (NMSCs) compared to the general population. Human papillomaviruses have a similar impact, promoting squamous cell carcinoma.

Environmental Triggers. The top trigger for skin cancer is UV radiation, followed by ionizing radiation, typically from the sun. Due to the high energy of UV waves, they cause DNA damage and genetic mutations, especially by mutating pyrimidines into cyclobutene pyrimidine dimers that nucleotide substitution mechanisms try and fail to fix. UV radiation (and also ionizing radiation) levels are impacted by the ozone (or lack thereof), latitude, altitude, and weather conditions. It is worth noting that UV radiation also contributes to speeding up skin aging, an otherwise natural part of aging and the human condition.

Biomarkers by Skin Disease. Major advances in elucidating gene pathways that may trigger skin diseases have been achieved thanks to the fields of computational biology and genomics. Because of the large volume gene pathways involved in skin diseases, the following sections are not meant to be taken as comprehensive.

Skin Cancers

Basal Cell Cancer. The most common head and neck skin cancer, it is slow-growing, with low metastatic potential, and is locally invasive. The main risk factor is ultraviolet (UV) radiation. Diagnosis relies on clinical examination as well as skin biopsy for confirmation and to assess the recurrence risk. Treatment options include surgical excision, Mohs surgery, cryosurgery, electrodesiccation and curettage, imiquimod or fluorouracil, photodynamic therapy, and radiation therapy. Despite being so common, basal cell cancer and squamous cell skin cancer cases are difficult to estimate because most cancer registries do not require and do not receive records of cases. Squamous Cell Cancer. The second most prevalent skin cancer in the U.S., it often emerges from precursor lesions and has the potential to metastasize. UV radiation is the primary risk factor. Surgical excision is the primary treatment, with Mohs micrographic surgery preferred for head and neck cases or those with high-risk characteristics. Radiation therapy is an option for older patients or those unable to undergo surgery. Immunosuppression increases lifetime risk and metastasis.

Melanoma Skin Cancer. This is a metastasizing cancer that originates in melanocytes and can appear in various colors, from brown to white. It often starts on the trunk in men and the legs in women, with darker skin offering some protection, but not immunity. Risk factors include strong evidence of exposure to ultraviolet radiation, moles (large moles, over 50 moles, atypically shaped moles), family history (genetic inheritance of melanoma), weight, and fair phenotype (light skin that burns or freckles easily, naturally blonde or red hair, blue or green eyes). Statistically, American men under 50 years have seen incidence rates decline by 1% per year, while men over 50 years have stabilized rates. American women, however, see stable rates for those under 50 years, but a 1% increase per year for those over 50 years. Trauma and chronic inflammation are associated with special site melanoma, particularly acral melanoma. Although melanoma is less common than some skin cancers, it has a higher tendency to metastasize if not diagnosed and treated.

Merkel Cell Skin Cancer. A rare, metastasizing skin cancer primarily typically affecting individuals over 50 years old. Risk factors include the Merkel cell polyomavirus, UV exposure, and immunosuppression. Diagnosis involves clinical examination, tissue biopsy, and cytokeratin-20 immunohistochemistry. There is scant data to generate national incidence and prevalence rates; however, the largest dataset in Europe of this cancer type reports that men on average had it more often than women, with incidence rates increasing by 3.9% per year during 2004–2018.

Lymphoma. Originating in the lymphatic system, lymphoma is the result of either T or B lymphocytes becoming cancerous. Risk factors for lymphoma include certain viral infections, exposure to certain chemicals and pesticides, family history, and a weakened immune system. Common methods for diagnosing lymphoma include blood tests, imaging studies like CT scans and PET scans, and lymph node biopsy. The incidence of non-Hodgkin lymphoma decreased by about 1% per year from 2015 to 2019.

Kaposi Sarcoma. Kaposi sarcoma results from Kaposi sarcoma-associated herpesvirus (KSHV) infections in the blood and lymphatic vessel cells. Risk factors include KSHV infection, which is more prevalent among those with weakened immune systems. Diagnosis relies on recognizing characteristic skin lesions. Global declines in incidence in Europe, Latin America, the U.S., and Africa are said to be matched with declines in HIV incidence and prevalence due to safe sex practices, public awareness, and viral therapies.

Benign Skin Disorders. This subsection aims to provide a brief description of the disorder and its primary risk factors.

Acne is a condition caused when blocked skin follicles form a plug caused by oil from glands, bacteria, and dead cells which clump together and swell. There are many environmental and behavioral contributors to the development of acne, including, but not limited to, air pollution, certain skincare products, medications, hormonal issues, and, more recently, diet and stress. In addition, genetic inheritance of specific polymorphisms has been observed to yield the acne phenotype more prominently for certain ethnic groups.

Alopecia Areata. A condition causing hair to fall out in small, round patches. Risk factors include, but are not limited to, a history of atopic dermatitis for the individual and family, inheritance of various single-nucleotide polymorphisms, pre-existing autoimmune thyroid diseases, and psychological stress.

Atopic Dermatitis. A skin disease characterized by itchiness, redness, swelling, cracking, and. It is closely associated with asthma, with several studies observing comorbidity of the two conditions. Risk factors include, but are not limited to, sex, existing allergies, family history of allergens, and air pollution.

Epidermolysis Bullosa. A group of genetic connective tissue diseases causing painful blisters to form on the skin and scar. Unlike the previous disorders, the

consequences of severe epidermolysis bullosa can result in organ damage and failure. The most common form is epidermolysis bullosa simplex, which is restricted to the epidermis of the skin with minimal scarring. Both mutations to modifier genes and epigenetic mechanisms contribute to the loss of tissue integrity. Non-genetic risk factors may include expression of inflammatory bowel disease reported in children and SARS-CoV-2 infection.

Hidradenitis Suppurativa. A chronic inflammatory condition characterized by pimple-like bumps, boils, and tunnels under the skin. It is associated with bacterial infection of the apocrine sweat glands. Risk factors include, but are not limited to family history as it can be inherited, age (between adolescence and 40 years), sex (females more likely), weight, stress, and even early squamous cell cancer and psoriasis. It remains unclear whether race is a risk factor, with various studies in support of this, such as Mokos et al. (2023), and others that remain skeptical, such as Bryd et al..

Ichthyosis. A rare autosomal recessive congenital disorder causing dry, thickened skin that resembles fish scales. Reported genetic causes of this disorder are severe mutations in the adenosine-triphosphate-binding cassette A12 gene, resulting in an extreme form of ichthyosis, and the Vitamin D receptor gene (polymorphism), resulting in a milder form. In the case of the latter, age and raised serum ALP levels have been suggested to be risk factors.

Pachyonychia Congenita. A rare congenital disorder causing thick nails, painful calluses, and other symptoms. It is caused by variations in keratin genes, especially KRT6A and KRT6B.

Pemphigus. A disease where the immune system attacks healthy skin cells, resulting in blisters. Having pemphigus may lead to osteopenia, osteoporosis, and pathologic fractures, although further investigation is needed. One case report describes an interesting case of induced autoimmunity preventing pemphigus despite the patient having Hodgkin’s lymphoma, a risk factor for pemphigus. Other suggested risk factors are sex thymic diseases, P wave dispersion increments, and diet diversity.

Psoriasis. A skin disease that causes red, scaly, painful, swollen skin. While specific risk factors are still unclear for psoriasis, it is known to be associated with cardiovascular mortality, myocardial infarction, and stroke in its moderate to severe forms.

Raynaud's Phenomenon. A condition shunting blood vessels and causing insufficient blood flow to the hands and feet. Risk factors include migraine headaches, rheumatologic disease, vaso-occlusive diseases, hematologic disorders, physical injury, viral infection, and carpal tunnel syndrome. In one case report, there was an association of Raynaud's phenomenon with long-term silica exposure.

Rosacea. A long-term disease leading to reddened skin, pimples, and skin thickening, often affecting the face. Risk factors include high temperatures, Demodex mites, overuse of aggressive face cleansers, and cardiovascular diseases. There is a suggestion that alcohol consumption may also be a risk factor; however, follow-up studies of this scenario are required.

Scleroderma. A condition causing tight, hard skin and potential harm to blood vessels and organs. In systemic sclerosis patients, ACE inhibitors with concomitant arterial hypertension are a risk factor, as well as high levels of RNA polymerase III antibodies. Smoking, interestingly, has not been shown to be a risk factor.

Vitiligo. A common disorder leading to white patches of skin due to the destruction of melanocytes. It may manifest in childhood or adulthood. There is some correlation between Hepatitis C virus presence and adult onset of vitiligo. Polymorphisms in tumor necrosis factor-α and -β have been reported to be a risk factor, albeit only in one population. Arguably, one of the biggest difficulties of vitiligo is the stigma it carries and how those with it may be othered, shunned, and ostracized for it. Studies have compared various psychological and psychosocial parameters between those with vitiligo and those without to find that, overall, there is a higher incidence of anxiety and depression associated with vitiligo that is consistent across different ethnic communities.

Brief classification of the subject.

Multipigmented nevi have active BRAF or, in some cases, NRAS gene mutations, but do not undergo malignant transformation.

It is more correct to consider multiple sporadic dysplastic nevi as markers of melanoma risk. They are structural and cellular atypia, caused by recessive mutations in genes that control the cell cycle (p16/Ink4a, CDK4) and telomerase.

Melanoma is a very aggressive low-grade tumor, the risk of which increases with exposure to sunlight. The risk of spread increases with a number of aspects of the tumor and the vertical thickness of the tumor section.

Melanoma results from mutations in genes that control the cell cycle (P16/Ink4a, CDK4), growth signaling promoters (growth factors [eg, KIT], RAS, BRAF), and telomerase.

Melanoma often elicits an immune response and sometimes shows a dramatic response when treated with antibodies that boost T-cell immunity.

The incidence of basal cell and squamous cell cancer depends on the length of life exposed to sunlight.

Squamous cell skin cancer can develop with actinic keratosis, but can also be caused by exposure to chemicals, burns, or the effects of HPV on the immune system.

Squamous cell carcinoma has the potential to metastasize, but is much less aggressive than squamous cell carcinoma of the mucous membranes.

Disorders that call for the roots are classified according to the epidermal division.

These defects often turn into autoantibodies of specific proteins, damage the epithelium or basal membrane, and lead to the separation of keratinocytes (acantholysis).

The cyst is associated with IgG and the production of autoantibodies against intercellular desmoglia leads to the appearance of a corneal or subcorneal (exfoliative cyst) or suprabasilar (simple cyst).

Bullous pemphigoid associated with IgG-autoantibodies against basement membrane proteins, leading to the formation of subepidermal cysts.

Herpes K-shaped dermatitis is seen with the production of IgA autoantibodies that bind epidermal basement membrane and dermis against fibrils and subepidermal lesions.

Vegetables non-inflammatory factors include inherited epidermal stabilizing protein defects (eg, epidermolysis bullosa) and hereditary defects in porphyrin synthesis (porphyria), which damage the skin by induced sunlight through unclear mechanisms.

Acne occurs worldwide in all young people regardless of gender, but it is more severe in boys. Acne is less common in Asian people. The appearance of dandruff in adults indicates a physiological hormonal imbalance and a disturbance in the activity of the hair follicles, especially the sebaceous glands.

Rosacea- a common disease that occurs mostly in middle-aged and older women. This disease affects up to 3% of the population of the United States. Consists of 4 stages: (1) redness (prerosatsea); (2) persistent erythema and telangiectasias; (3) pustules and papules; (4) rhinophyma —thickening of the skin of the nose due to the inclusion of erythematous papules and skin glands.

Panniculitis— inflammation of the subcutaneous tissue. More often it develops in connective tissue barriers or it can develop directly in fatty tissues. Panniculitis often occurs on the feet. Acute or chronic.

Erythema nodosum is a form of widespread panniculitis with acute manifestations. Development of erythema nodosumβ- hemolytic streptococci, tuberculosis, sometimes coccidiomycosis, histoplasmosis and leprosy infections are

associated with the use of drugs (sulfanilamides, oral contraceptives), sarcoidosis, inflammatory diseases and tumors of the intestines, sometimes the causes remain unknown.

Erythema indurativum is a less common form of panniculitis and is more common in young people and women during menopause.

Weber-Christian disease (relapsing febrile nodular panniculitis) is a rare form of lobular panniculitis without vasculitis, which occurs equally in young children and adults.

Self-induced panniculitis is classified as secondary panniculitis. Its causes are related to self-injury or injection of toxic substances.

The skin becomes resistant to strong and long-lasting effects of microorganisms, pests and insects. We have previously discussed the role of bacteria in the pathogenesis of acne, but many dermatoses are caused by viruses.

Acne can appear at any age. Etiological factor is NRV. Transmission is associated with direct contact and activation of the virus in a virus-carrying organism. The wart may spontaneously regress within 6 months to 2 years.

Histological aspects of a wart: epidermal hyperplasia, often with a different course (wart-like, or papillomatous, epidermal hyperplasia), cytoplasm vacuolization (koilocytosis). More are located in the superficial layers of the epidermis and form a cracked area around the damaged nucleus.

Molluscum contagiosum — a common self-limiting viral skin disease called pox virus.

Impetigo is one of the most common superficial bacterial infections of the skin. It is characterized by a high level of contagiousness and often occurs in healthy people, sometimes it is observed in adults with reduced immunoreactivity. Basically, the dermis and hypodermis are located. Unlike deep mycoses of the skin, fungal diseases of the skin are located in the stratum corneum and are often caused by dermatophytes.

The histological aspects of dermatophytosis are different and depend on the aspects of the pathogen, the response of the host organism and the stage of bacterial super-infection. A mild stage of eczematous dermatitis with neutrophilic infiltration can be seen in the dermis.

Tests to test student knowledge.

1. Indicate the signs confirming that the patient has pruritic dermatosis:
A). Excoriation
B). "polished" nails
V). Lichenification
G). Dark brown pigmentation
*D). All of the above is true.

2. Show the main pathomorphological process in the skin in fascial flat iron:
A). Spongiosis
B). Balloon dystrophy
V). Granulomatosis
*G). Hypergranulosis
D). All of the above is true.

3. It is not typical for the pathomorphological appearance of atopic dermatitis:
A). Hyperkeratosis
* B). Acantholysis
V). Spongiosis
G). Acanthosis
D). Inflammatory reaction.

4. Select the definition of dermatitis. Dermatitis
*A). Inflammation of the skin caused by the influence of exogenous factors of a chemical or physical nature
B). Mycosis on smooth skin of a non-inflammatory nature, with damage to the stratum corneum of the epidermis
V). Itching. an infectious parasitic skin disease caused by pruritus, characterized by nocturnal itching of the skin, linear, paired papulo-vesicles, and pruritus.
G). Atopic dermatitis.

5. Choose the wrong answer. Dermatitis by etiology:
1. Chemical
* 2. Parasitic
3. Mechanic
4. Physical

5. Plant.

6. Choose the correct answer:
1. Erythroderma is a severe inflammatory skin disease
2. Many erythrodermas are clinically similar, so the etiological diagnosis can be determined only after a comprehensive examination of the patient
3. Erythroderma is a condition of the body indicating a severe condition.
* 4. All of the above is true.

7. Eczema is characterized by:
* 1. True rash polymorphism
2. Monomorphic papular rash
3. Erythematous-squamous spots with a raised edge like a roller
4. Hemorrhagic petechial rash

8. Show the morphological sign of the stearin stain phenomenon.
1. Follicular hyperkeratosis
* 2. Hyperproliferation of the epidermis
3. Acantholysis
4. Spongiosis
5. Anemia

9. Select the main pathomorphological process characteristic of pemphigus vulgaris.
1. Spongiosis
* 2. Acantholysis
3. Hyperkeratosis
4. Granulematosis

10. What is an LE-cell?
* 1. LE-cell is a neutrophil (hematoxylin body) that phagocytizes the nuclear detritus of another neutrophil, which has become an antigen.
2. LE-cell is a cell of the spinous layer of the epidermis that has lost contact with neighboring cells due to the destruction of desmomas.
3. LE-cell is an epidermal cell
4. The LE cell is myeloid.

11. Choose the correct definition for Rosatsea:
1. Rosacea is a skin disease that occurs in young people, characterized by the appearance of papules and pustules on the face.
2. Rosacea is a chronic infectious disease caused by the Demodex folliculorum mite, characterized by redness of the skin of the face, followed by the appearance of telangiectasias, papules and pustules.
* 3. Rosacea is often a chronic non-infectious disease characterized by reddening of the skin of the face followed by the appearance of telangiectasias, papules and pustules.
4. All answers are correct.

12. The following factors play a role in the pathogenesis of acne:
1. Long-term use of corticosteroid drugs
2. Menstrual disorders in women
3. Endocrine diseases
4. Increased secretion of sebaceous glands
5. All of the above are true

13. Spongiosis is:
A) excessive thickening of the epidermal layer,
B) hyperplasia of the epidermis with elongation of interpapillary nipples,
* C) intercellular swelling of the epidermis
D) pathological keratinization of individual cells of the spinous layer.

14. Differentiate vitiligo from:
A) melanoderma,
B) lentigo,
C) nevus,
* D) albinism.

The rarest variant of nevus
* A) blue,
B) limited,
B) complex,
D) skin.

15. The most common extracutaneous localization of melanoma6
A) oral cavity,
B) esophagus,
C) genitals,
* D) eye blood vessels

16. The most important prognostic indicator for melanoma:
A) amount of pigment,
B) degree of stromal fibrosis,
* B) number of mitosis.
D) type of tumor growth.

17. Seborrheic keratosis is:
* A) epithelium is a benign tumor of the skin,
B) melanocytic tumor,
C) malignant tumor of the epidermis.
D) swelling of the dermis.

18. Keratoacanthoma should be distinguished from:
A) dermoid cyst.
B) steatocystoma.
C) Acanthosis nigricans.
* D) squamous cell carcinoma.

19. Pre-cancerous condition:
A) keratoacanthoma,
* B) Bowen's disease,
C) black acanthosis,
D) fibroepithelial polyp,

20. What is Dermatofibroma:
* A) A benign tumor of the dermis.
B) A benign tumor of the epidermis.
C) swelling of excess skin.
D) melanocytic tumor.

21. Fungal mycosis:
A) acute inflammatory dermatosis.
B) bullous skin disease.
* C) swelling of the skin.
D) developmental disability.

22. Eccrine Poroma:
* A) Swelling of the ducts of the sweat glands.
B) hair follicle tumor,
C) epithelial cyst.
D) fibroepithelial polyp.

23. A typical histological sign of pemphigus:
A) spongiosis,
B) exocytosis,
* B) acantholysis,
D) dyskeratosis.

24. Macula:
A) density,
* B) spot,
B) thin-walled space,
D) line

25. Epidermis consists of cells:
A) Anichkov cells (histiocytes),
* B) Langerhans (white epidermal cells),
C) Sternberg.
D) Langansa (multinucleated giant cells).

List of references:

Main:

1. Magrupov B.A., Tursunov K.Z., Israilov R.I. General pathological anatomy. T-2018.

Additional:

1. Fundamentals of disease pathology according to Robbins and Cothran. M. 2015

List of electronic resources.

1.www.Patology.com.uz**.**

1. http://www.ziyonet.uz
2. http://www.edu.uz
3. http://www.pedagog.uz
4. www.lex.uz
5. www.tma.uz